DARKSTALKERS AND THE TWELVE PRINCIPLES OF ANIMATION

Posted 10 July 2010
By Richmond Lee

I originally posted this a few years ago on the Madman's Cafe, one of the best online communities for thoughtful discussion of video games since the 90s. The post got alot of positive responses, so I've finally backed it up here on my own blog with a few edits. To all the members of the Cafe, thanks for your encouragement!_

All animated sprite rips in this article are from www.fightersgeneration.com, a very cool database of fighting game info. Please note that the sprites do not always have accurate timing. The best way to experience the visual splendor of Darkstalkers is to track down an actual copy of the game and play it!

Darkstalkers (aka Vampire) is one of my favorite videogame series. It combines great characters with deep gameplay and amazing animation. When it burst onto the arcade scene in 1994 I was absolutely astounded by the graphics. It was one of the first video games to combine feature film quality animation with responsive controls and it really set the bar for all the great fighting games that followed after it.

Darkstalkers was Capcom's followup to their monstrously successful and innovative series, Street Fighter 2. There is a tremendous jump in animation quality between the two games. This is because during the mid 90s, Capcom's animators started to take a much more educated approach to their craft through studious application of the 12 principles of animation. They are the 10 commandments of animation (well, 12 commandments–but you get the idea) set forth by Frank Thomas and Ollie Johnston, who were great pioneers of animation at Disney from their early years through the 80s. These 12 principles form the foundation for animation in the American tradition (ie Disney, Warner Bros, Pixar etc), but they're also found in great animation the world over.

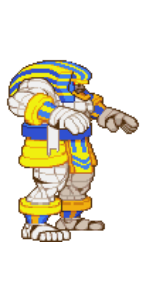
The following is a primer on the 12 principles of animation, as they are applied in Darkstalkers and its various sequals.

Squash and Stretch

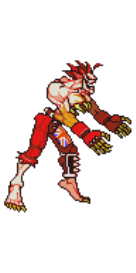
Squash and stretch refers to the animators ability to distort the distribution of mass in an object as it moves through space. It generally recalls the very bouncy, rubbery movments of Disney esque animation, but it's actually much more comprehensive than that. Squash and stretch occurs all around us in real life. Just pull in and extend your arm and observe how your muscles bunch up then stretch out. Or look at a cat. They curl up into compact little balls then spring into super lithe living torpedos.

Darkstalkers has alot of squash in stretch in obvious and in subtle places.

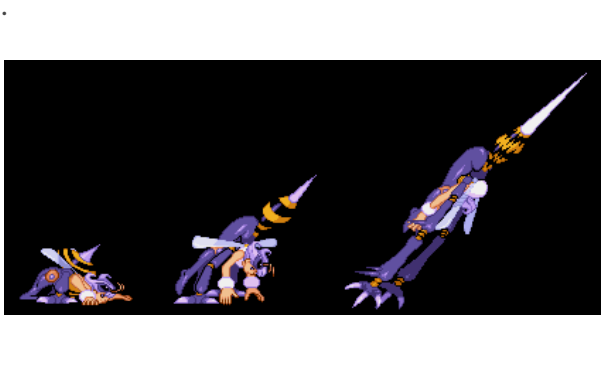
Look at how Akaris's tomb grows at the point of impact, then shrinks back. And also how his feet are very thin when they land on the ground until the rest of his mass catches up with them. It gives the attack a real pop:



Here you can see Lord Raptor's limbs really stretch out, especially his back leg:



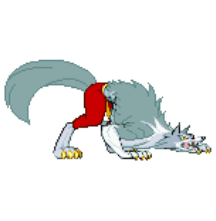
Q Bee is perhaps the best example of effective squashing and stretching in Darkstalkers. She's relatively restrained compared to the rest of the cast, but her animations have some of the craziest distortions. If you go frame by frame you might be suprized by just how much they squash and stretch her out, yet it feels perfectly natural in motion.

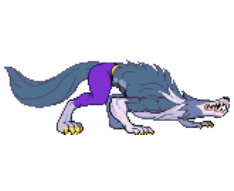


She was introduced years later in the third iteration of Darkstalkers, when the animators had matured even further in their abilities. Q-bee's animation is almost on par with Street Fighter III (my all time favorite game).

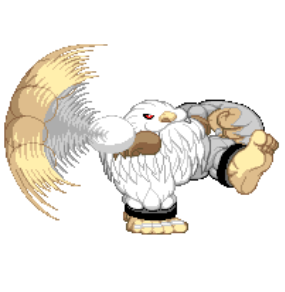
Anticipation

This is the build up before the release of the action. Since this telegraphs movement, you can't have too much of this in a video game as inputs should be fairly instantaneous. Still Capcom managed to implement this well. Most of the resting animations for the characters already set up the characters for some sort of counter movement. If you look at John Talbain in his crouching position he's super low to the ground, but any of his animations coming out of that are really dynamic and "pop" out with a counter movement. Basically every resting stance in the game is a sort of anticipation pose:





A more direct example of anticipation can be seen here:

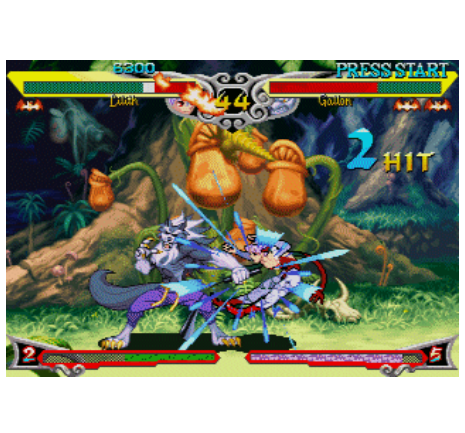


He's got a very nice windup before the actual punch. Anticipation helps to prepare the audience for the coming action and also gives the sense that the character is thinking about what they're doing.

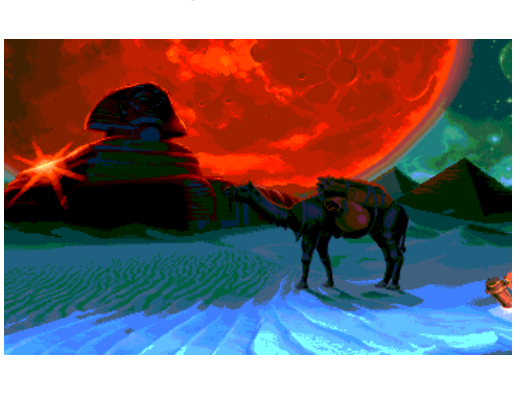
Staging

Basically how an action is framed in a shot with consideration to things like placement, camera angle, zoom and lighting. As a 2-d fighter, Darkstalkers only takes place in a fixed side view, but the stages are optimized for this setup. They're interesting and they frame the action well, without distracting from it.

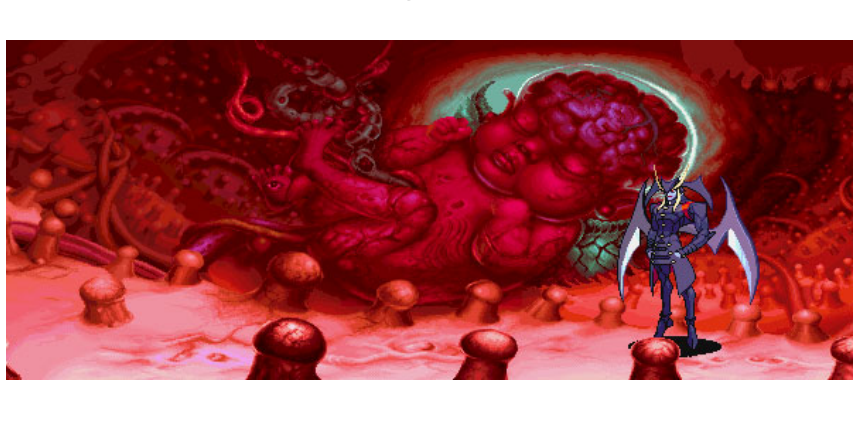
Look at how the killer plants in the background frame the action, rather than clash with it.



Darkstalkers has some GREAT stages. It was the first Capcom game to have backgrounds that felt like they belonged in a feature film.



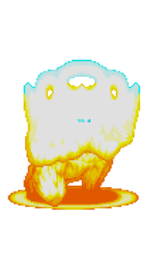
Aside from being technically sound with good rendering, color choices, and prespective, the stages were full of character and mood. Fetus of God will always be a personal favorite of mine (so disturbing!).

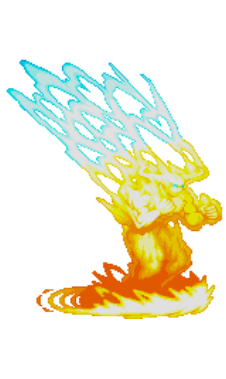


my big brother HATED playing on this stage!

Straight Ahead or Pose to Pose

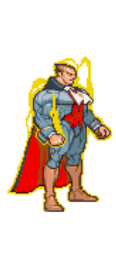
This has more to do with the process of animation itself. When animating, you can either draw out the key poses first then go back and fill in the inbetweens, or you can plow through the animation one frame after another in order. Complex character animations are generally done pose to pose, while more peripheral animations such as cloth are done straightahead (though generally after the main animation has been worked out pose to pose). Most of the animations in the game were probably worked out pose to pose. But some such as Pyron's flames were very likely done with straight ahead animation:

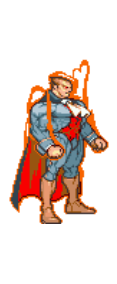




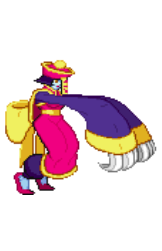
Followthrough and overlapping action

This mostly pertains to things that trail the main action like clothing, hair, bouncing breasts etc, think of it as the aftermath of the main action. The Vampire games are good about this. DarkStalkers is one of the first games I can recall that has any followthrough animation at all. For instance, check out Dimitri's cape:

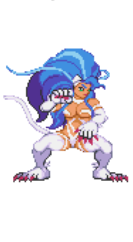




Or Hsein-Ko's baggy robes and ribbon:



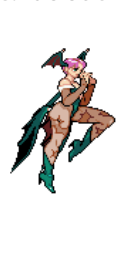
Felecia's hair has tons of volume and body. It bounces along as it trails her movements (this animation is also a great example of squash and stretch):



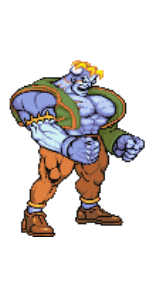
Slow In Slow Out

This refers to changing the spacing and timing of actions so they're not totally uniform and flat (when animation is very even it is sometimes refered to as the "King Kong effect" referring to the old stop motion films where everything moved at a steady speed). Darkstalkers is a real vanguard when it comes to slow in and slow out for game animation. I'm sure alot of you guys can recall the first time you saw Darkstalkers and thought "wow that's beautiful, so smooth!" It's not just because it had more frames of animation than most other games to date, but because they put those frames in the right places. Every action has a varied tempo.

For instance, look at Lillith's walk cycle. It's such a nice little skip, with a great lilt to it:

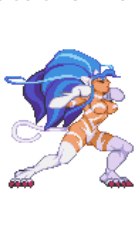


The frame padding in Vampire is very expertly done to give weight to the moves. Fierce attacks tend to have alot of frame padding, giving them a very meaty feeling. They looked and FELT stronger than weak attacks. The principle of slow in slow out is very obviously exhibited with the slower characters, like Victor with his giant club like limbs.



He was the first character in Darkstalkers I ever picked because I enjoyed watching his ponderous movements, which got more and more extreme as the games went on.

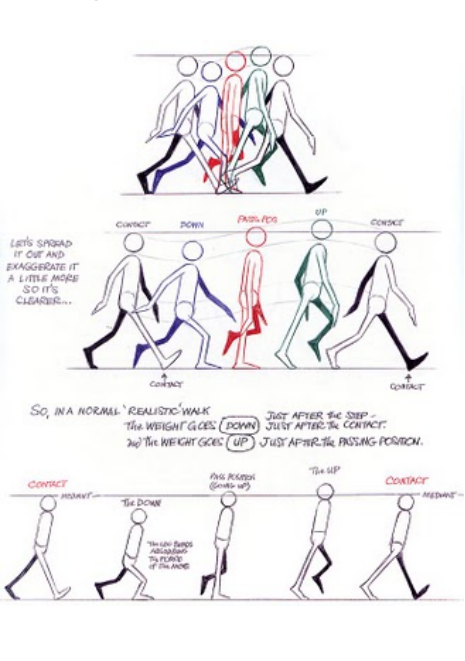
Oh and I almost forgot to mention, another thing the Darkstalkers games do well is the characters tend to lead their actions with their shoulders and hips:



This is supremely important for imparting impact. It's a basic principle of martial arts that your power comes from your core. Alot of animation still does not utilize this principle. Many 3d games have animations where the characters lead with their extremeties rather than their body, leading to a feeling of a marionette on strings.

Arcs

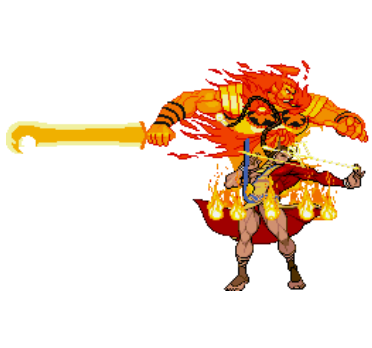
Just about every living thing moves in arcs. Human locomotion comes from the rotation of our joints. In animation, we use arcs to map out the paths of movements. Here's an example of arcs being used for a walk cycle:


CONTACT
DOWN
PASSING
UP
CONTACT
LET'S SPREAD IT OUT AND EXAGGERATE IT A LITTLE MORE SO IT'S CLEARER...
SO, IN A NORMAL 'REALISTIC' WALK
THE WEIGHT GOES DOWN JUST AFTER THE STEP - JUST AFTER THE CONTACT.
THE WEIGHT GOES UP JUST AFTER THE PASSING POSITION.
CONTACT
THE DOWN
THE UP
CONTACT

A page from The Animator's Survival Kit, by Richard Williams. This is one of the very best books on the fundamentals of animation.

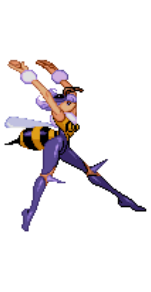
Arcs are essential for keeping your animation smooth and on track so that nothing slips out of place.

All the motions in Darkstalkers were certainly planned out with arcs. Some are quite obvious:



But really, everything in the game has good motion paths. This is a really essential principle, especially for traditional hand drawn animation. You have to plan movements on arcs, otherwise they won't line up frame to frame.

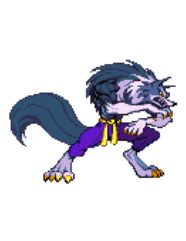
By the time they got to animating Vampire Savior, they were pulling off some really complex animation:



There are so many arcs going on in that motion, and alot of them are overlapping, turning in on themselves. While her legs are performing a very broad circular action, there's so much subtly going on in her torso, especially her shoulders. Look at how they loop towards the viewer in a figure 8. Then look at her head turning in perspective, with the antennae trailing behind forming another circle. This circular motion is also echoed in her Bee-hind (ha!). There's also a ton of great squashing and stretching going on with the spikes really popping out of her knees and more subtle stuff with her legs and stinger. There's also some great motion blurs on the wings, and great overlapping action with her legs snapping into full extension only after a full rotation of the shoulders, into the torso, into her hips into her knees. There's so much weight as she throws her entire body into the cartwheel then catches herself and settles back onto the ground for a split second before resuming hovering. Everything about this animation is great and exhibits mastery of every principle of animation. This animation has it all!

Secondary Action

Not to be confused with followthrough, this is more like minor actions supporting a main action. John Talbain's tail animations are a way excellent example of secondary action:

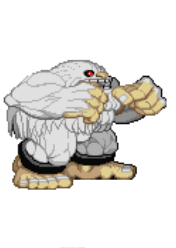


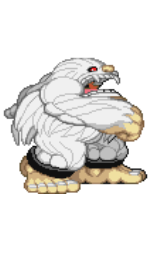
His tail is never the main action. During his neutral stance, the main action is his growling. That's what is being emphasized, but the tail gives an added sense of energy and even friskiness. If you took away his tail animation, all his movements would still work, but they wouldn't have the same sense of character.

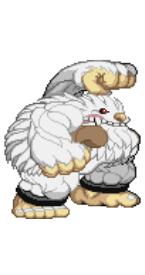
Timing

This refers to the speed of an animation. Timing helps to establish physical properties such as weight, velocity and force. Timing is also important to acting. A character who is depressed might move very slowly with a lot of inertia. A character that's scared might make fast, jumpy motions. Timing can be very abstract. A humorous animation could be said to have good comedic timing.

Darkstalkers has very good timing, especially with regards to the interactive nature of its animation. Every button press in the game conjures up an instantaneous performance from the character. It's impressive how you can feel the precise power of each attack. Light attacks tend to come out very quickly. Heavier attacks come out slower, with more weight behind them.

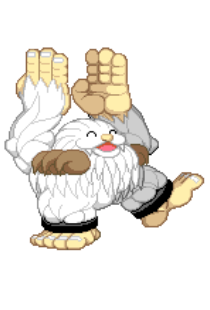


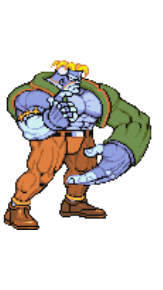


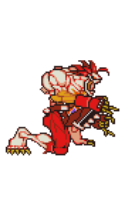


This is appropriate for both aesthetics and balanced gameplay.

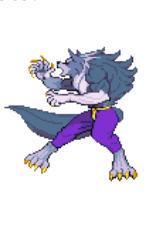
Darkstalkers also uses timing to establish the varied personalities of its characters. Some characters move like beasts driven by instinct:

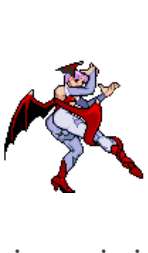




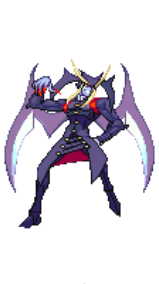


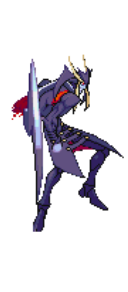
Some like trained martial artists:

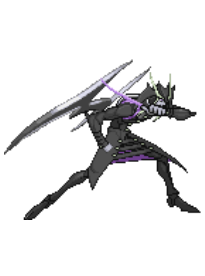




Jedah has the presence of a seasoned magician conjuring a spell and taking time to observe the outcome.



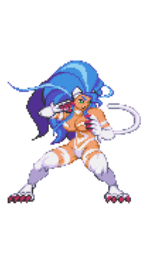


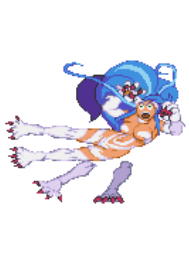


The Darkstalkers games use varied timing to help convey a character's physical properties as well as their personality.

Exaggeration

This generally means pushing the animation further than real life. This is sorta a guiding value behind every principle of animation. It seems obvious to state but, the Darkstalkers games are full of really good exaggeration. This is no easy task. Most next gen games have rather undynamic animation (often as a result of motion capture). It's also easy to go overboard with the exaggeration. This is a matter of personal preference. I'm not a fan of animation where everything is exaggerated to the most extreme degree. When everything is pushed at all times, nothing is emphasized. It can come off as overacting. Darkstalkers is very good about exaggerating certain motions for greater impact, while leaving other motions more mundane.

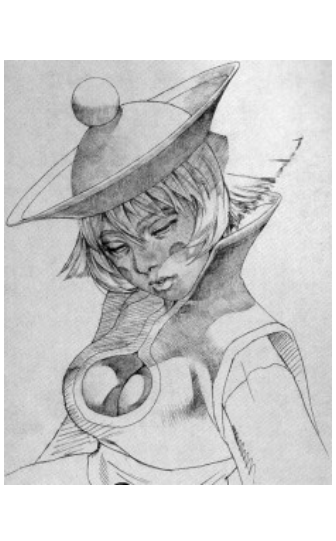




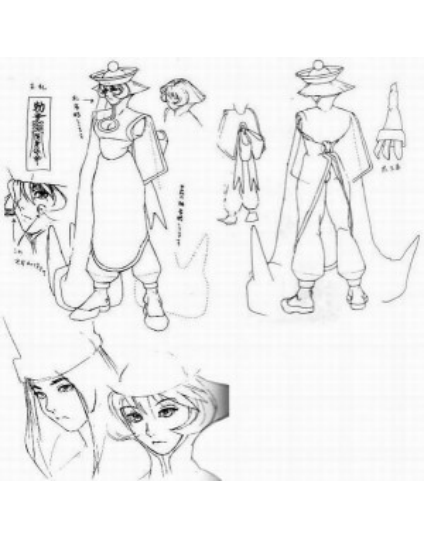
It's very tastefully balanced.

Solid Drawing

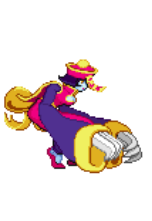
This basically means good volumetric drawing. Capcom's artists absolutely excel at drawing.

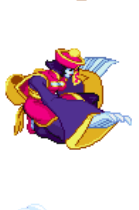


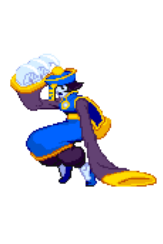
All their characters are solidly constructed, with a great sense of volume, depth, weight, and character.



This is hard enough to do with any form of drawing, even harder to do consistently in animation and harder still to convey in tiny sprites (sprite work takes a mountain of patience).







This is pretty much self explanatory when you look at any Capcom fighter. They are all drawn extremmmmmmely well.

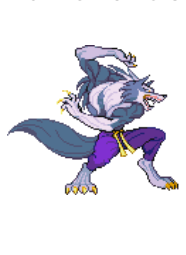
12.) Appeal: This is the most abstract and subjective concept out of all the principles. Basically appeal means that there is something interesting in the animation that captures your attention. I personally love love love all the Darkstalkers characters. From their iconic designs to their animations and the way their personalities are conveyed through their animations, i love these characters dearly. To me they are every bit as interesting as classic Warner Bros or Disney characters. Capcom really truly excels at making appealing characters. Think about how little story they put directly into their games, and yet think about the empire of lore that has been extrapolated from them. People love these characters. There hasn't been a new Darkstalkers game in over a decade, but Capcom continues to put out Darkstalkers merchandise, people continue to create fan art and comics and even cosplay as the characters.

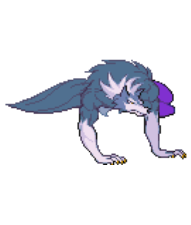
Once upon a time Capcom was able to make videogame characters that people could instantly identify with. No need for complex overwrought back stories and cinematics, you just saw the character and instantly understood who they were.

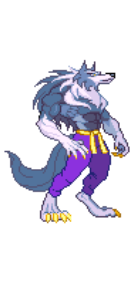
These games were like great rock albums, and the characters were all the different tracks that you didn't mind listening to over and over because you could always find something new to appreciate. The games and the characters that populated them were inspired. The graphics weren't just technologically impressive, they were INTERESTING.

Heck, I met most of my best friends in college through a common love of Capcom fighters (this proved to be a far better barometer of compatibility than musical tastes or ethnicity or other means of identification). A big part of it was we enjoyed the gameplay so much, but an even bigger part was the art and the great characters.

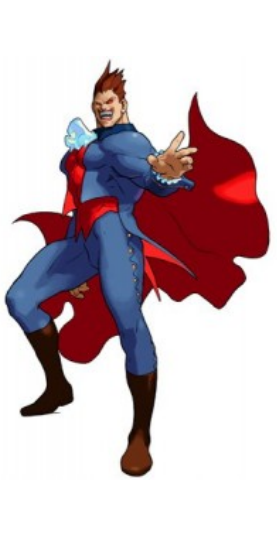
John Talbain is a kung fu fighting werewolf. His movements are an amazing blend of wild animal fury tempered with human discipline.



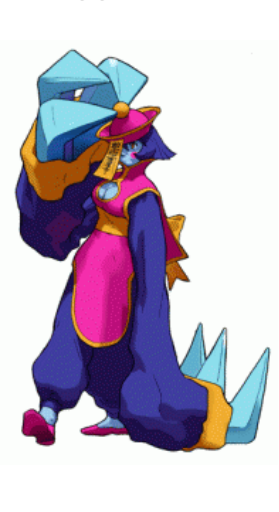




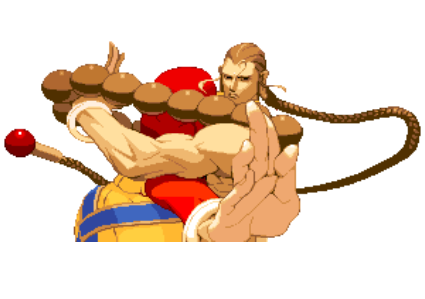
Dimitri instantly reads as cocky, arrogant and vicious. His posture is very proud. He fights in a muthaflippin' skin tight tuxedo with riding pants and cape, what a jerk! But he makes it look awesome!



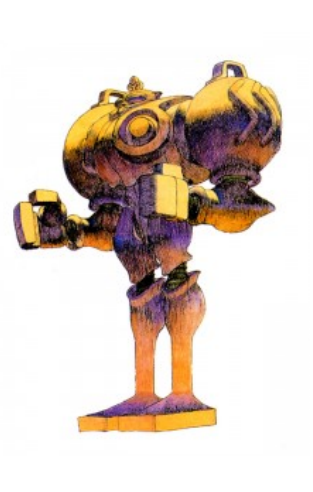
Lei Lei is an adorable Chinese hopping ghost!



Donovan is stern and stoic, but hides deep emotions. He's a great tragic hero.

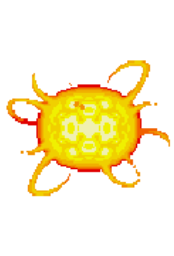


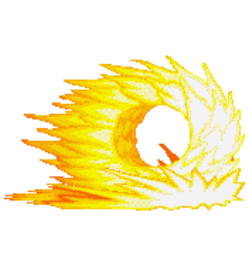
Phobos is a robot shaped like ancient Japanese Jomon pottery! He's so mysterious and ancient feeling.

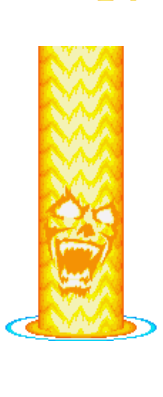


He captures the feeling of early civilization art, which is just barely representational. It works so well with his character.

And Pyron, he's not just another generic horned demon, he's an allmighty alien made out of plasma that's based off of biblical descriptions of god and angels appearing as pillars of fire and flaming wheels.







These passages have even been interpreted by some as descriptions of contact with UFOs, hence Pyron is an alien. Isn't that awesome? He's not just demonic, he's glorious.

I could go on and on about every single character, but I think i've said enough. I hope this post has been enjoyable to read. I'd love to hear your thoughts. Who are some of your favorite characters? What do you like about them? Do any particular animations stand out? Don't hesitate to post in the comments section!

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